SUSTAINABILITY

Neighborhood sustainability refers to the responsible use of the area's natural resources to meet the present needs without compromising the needs of future generations. It addresses environmental issues concerning resource conservation, preservation of natural corridors, and guiding new growth into the existing community. The purpose of sustainability in neighborhood planning is to develop strategies and actions that encourage sustainable living and building practices across the planning area.

Residents of the Eastgate neighborhood expressed an interest in learning more about sustainability. The purpose of this chapter is to outline the variety of opportunities that exist to encourage sustainable living practices and strategies to help promote and educate residents about the benefits of sustainable living.

The goal of this chapter is to outline strategies and actions that will ***increase awareness and participation in resource conservation efforts***.

Key Planning Considerations

There are several considerations in relation to sustainability. Specifically, this area is impacted by the following issues: recycling, water and energy conservation, stormwater management, greenways and open space, alternative transportation, and education.

Recycling

Recycling is an important component of conservation efforts. By recycling basic household items, residents are preserving landfill space and keeping potentially harmful items out of existing landfills. Recycling also helps to extend the life of scarce resources, like oil, which is utilized to make many plastics, and reduces energy waste that is needed to produce new items from raw materials. In maximizing space in municipal landfills, the City can utilize existing infrastructure for a longer period of time and minimize capital costs of purchasing land and constructing additional landfills.

The City currently offers curbside recycling collection and an E-waste drop-off center to its residents. The City recycles newspaper, magazines, white paper, aluminum and steel cans, #1 and #2 plastic, clear and brown glass, and lead acid car batteries curbside. Recyclables are required to be pre-sorted and are not collected if incorrectly sorted. To participate in curbside recycling, residents sign-up online to receive bags. Recyclable materials are picked up once a week on the same day as the brush and bulky pick-up. This service is only provided to residences with curbside trash pickup which includes all single-family and duplex residences. Additionally, the City provides annual curbside Christmas tree recycling. City participation in curbside recycling is around 60%, but no data exists to monitor neighborhood-level participation.

Through a partnership with the City of Bryan and Texas A&M University, drop-off service is available at the City of Bryan Drive-in Recycle Center located at

the Wal-Mart on Briarcrest Drive, and at the Texas A&M University Physical Plant on South College Avenue.

The City offers a drop-off site for small E-Waste, rechargeable batteries, catalogues, and phone books behind the Police Department on William King Cole Drive. The City also offers a 24-Hour Do-It-Yourself Used Motor Oil and Oil Filter Center. Recycling used oil is the only legal method of oil disposal. Recycled motor oil can be reprocessed into industrial burner fuel or refined into gasoline, home heating oil, or new motor oil. Recycling of white goods, or large appliances containing freon, is available at the BVSWMA landfill on Rock Prairie Road with a charge for freon extraction.

The City does not offer recycling pick-up service at commercial or multi-family locations. While City Council considered a funding request for the FY2011 budget, there were no dedicated funds for a drop-off facility for commercial and multi-family complexes.

During 2002, a multi-family recycling pilot program was conducted by the City. This program provided valuable information about the cost efficiency of multi-family recycling. The program utilized two different methods of providing on-site drop-off containers at different apartment complexes in the City. Both methods had high rates of contamination which raises the cost of providing the service because of the labor involved in sorting and decontaminating the recyclable materials. On-site recycling for apartments will not be financially feasible for College Station until that the option of single-stream recycling can be made available. Single-stream recycling would allow for all recyclable materials to be bagged and picked up together for sorting at a separate facility. This service is unlikely to happen without partnerships with the City of Bryan and Brazos Valley Solid Waste Management Agency (BVSWMA) to make the service cost-effective. While the City currently does not provide recycling services to multi-family complexes, there are two businesses within the College Station area that provide curbside service for a fee.

The City also offers a Borrow-A-Bin program for large events, where groups can borrow up to eight recycling bins free of charge to offer recycling opportunities at large gatherings or other neighborhood events.

Composting

Composting is another method used to increase sustainability through the reuse of existing materials. Green waste, such as food and yard waste, which make up a large portion of the waste stream, are kept out of the landfill and utilized to create compost. The process of composting utilizes natural decomposition processes to create nutrient-rich soil that can be used in gardening and lawn maintenance without creating additional waste. Brazos Valley Solid Waste Management Agency (BVSWMA) offers Master Composting Classes to all residents of the Brazos Valley. This program offers residents more in-depth information about proper composting. Currently, the class costs $15, is offered twice a year, and has a maximum capacity of 15 people per class. The fee also includes a compost bin. The BVSWMA website also

offers step-by-step instructions on how to construct your own vermicomposting bin which utilizes worms to create the compost.

In addition to these programs, College Station Utility (CSU) customers are also offered two free green waste drop-offs a month at the City of Bryan Compost Facility. This service is included as part of the residential sanitation fee. In addition to drop-off, the facility also offers the purchase of compost for reduced rates.

Hazardous Waste

Brazos Valley Solid Waste Management Agency offers a Bi-Annual Household Hazardous Waste Collection at no charge to all residents of the Brazos Valley. This event offers the opportunity to safely dispose of harmful chemicals and products and without harm to the environment. Residents can find out about this service by checking their monthly utility bill insert, keeping up with municipal news on the City's website (www.cstx.gov), or watching local media.

Recycling Strategies:

- **Provide effective organization support and training opportunities (S1.1) -** Work with established neighborhood organizations to develop a standing green committee that works on developing projects that encourage recycling, participation in green events, and promoting sustainable living practices.
- **Program Continuation (S1.2) -** Continue to promote existing programs like Household Hazardous Waste Collection and Master Composting Classes. Work with neighborhood organizations to provide more effective communication about programs and encourage more participation.
- **Ongoing evaluation and indicator program (S1.3) -** Begin tracking recycling participation rates at a neighborhood level to provide baseline data for evaluating program effectiveness.
- **Program Continuation (S1.4) -** Continue to evaluate feasibility of providing drop-off location for multi-family and commercial recycling.
- **Program Continuation (S1.5) -** Continue to evaluate fiscal feasibility of operating a single-source recycling program to allow residents in apartments the opportunity to recycle.
- **Program Continuation (S1.6) -** Continue to contact new residential utility customers to educate about recycling programs and encourage participation in curbside recycling.

Utility Conservation

Water Conservation

Water conservation is a large part of sustainability, while water is a renewable resource; College Station relies on water drawn from aquifers. Texas aquifers have been an abundant supply of potable water for the State; however, production from aquifers must be carefully monitored so that the rate of water extraction does not exceed the rate of recharge. The City currently has capacity to produce 30 million gallons of drinking water each day with eight different wells. During drought conditions and dry summer months, daily

water usage has reached near full capacity of the existing system. Water conservation is still the best method to provide additional capacity to the water supply and continue to protect the City's water sources from over-extraction.

Water usage is monitored daily by College Station Utilities. Typically, highest water usage occurs during the summer months due to irrigation and pool usage.

Improving Water Conservation

Improving water conservation is not only important to preserving the future capacity of the City's water resources, but it can also save residents money. Additionally, by preserving the capacity in our existing wells, residents can help lower capital expenditures for additional wells to expand the current supply. In order to help improve water conservation efforts, the City has instituted a tiered water rate system that places higher rates on monthly usage that is over 10,000 gallons.

To improve City water conservation, the City has invested in the development of a grey water irrigation system at Veteran's Park to irrigate its athletic fields. Residents can also capture water run-off and utilize rainwater harvesting to offset the need to irrigate by installing rain barrels. Residential rain barrels are generally attached to a home's gutter system and collect rain water that can then be utilized to irrigate gardens and lawns.

The City offers free water audits to its residents to help identify ways to conserve water within the home. Making better use of this resource will assist in meeting water conservation and sustainability goals.

To encourage investment in water conservation, College Station Utilities currently offers rebate programs for the purchase of rain barrels and low-flow toilets. The City also works with the top 1% residential water users to schedule water audits and ensure that water resources are being used as efficiently as possible.

Reducing Water Consumption

One of the easiest ways to reduce water use is to modify household irrigation systems. Overwatering, especially during summer months, is a significant contributor to the City's water consumption rates. There are a variety of methods that can be utilized to reduce the amount of water used for irrigation. One way is to perform an irrigation audit and make sure that water is not running off the property after irrigating.

Generally, lawns only need to be watered once a week. The City's website offers detailed information on how to determine how long to run the irrigation system to adequately irrigate different types of lawns. The length of time depends on the output rate of the system, the type of sun exposure of the lawn, and the type of lawn being irrigated. Residents and Homeowner Associations can also invest in irrigation systems that have rain sensors to keep them from running during or immediately after a rain event.

Residents that wish to make a significant impact on water conservation can invest in installing xeriscaping or native lawns that are more suited to the climate and require less watering. Xeriscaping is a type of landscaping that emphasizes the use of plant material that is appropriate to the local climate while working to avoid water evaporation and run-off through grading. Texas Agricultural Extension Services website provides information about how to utilize xeriscaping to become more water efficient. Planting a native lawn that requires less watering is one component of xeriscaping. Native lawns utilize grasses that are compatible with the local climate. Once planted, a native lawn can reduce both the amount of water needed to maintain it and the frequency in which it needs to be mowed.

Simple adjustments like low-flow shower heads and aerators, repairing water leaks, and using a toilet tank bank are small and inexpensive improvements that can make a home more water efficient. More expensive methods include installing more water efficient toilets, washing machines, pool covers, and tankless water heaters. Everyday habits like turning off the water faucet when washing hands or brushing teeth, and making sure to only wash full loads of laundry can also improve water conservation.

Energy Conservation

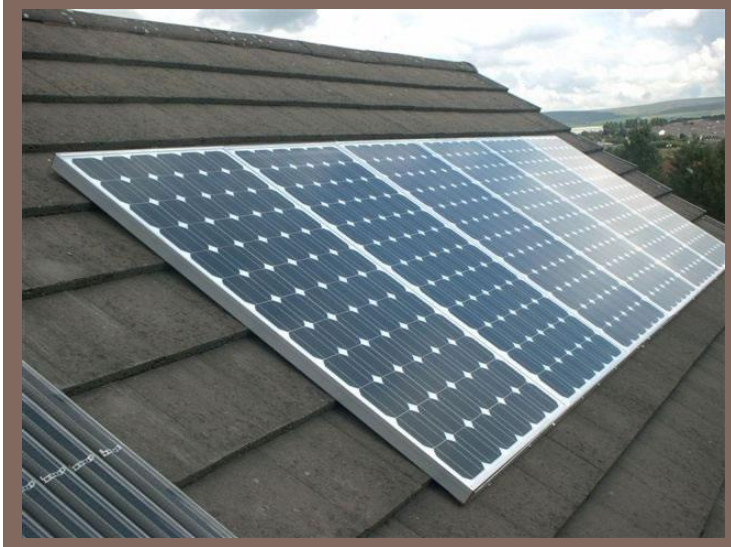
Conserving energy resources can have an impact on household budgets. Energy cost in Texas consume an average of nine percent of household after-tax income (2009 estimate, Source: www.americaspower.org). Reducing household energy waste not only lowers individual costs, but preserves natural resources that are used to create electricity.

Rain barrels, such as the one above, are one method of reducing water consumption by utilizing rain water to irrigate lawns and landscaped areas.

Heating and cooling a home typically has the most impact on energy consumption. Installing energy efficient HVAC systems and utilizing programmable thermostats can help to reduce residential energy consumption. Other methods to reduce energy consumption include installing energy efficient doors, windows, and insulation, as well as sealing air leaks around a home. In addition, general home maintenance and repair of roofs and exterior walls as well as planting shade trees around a home, can help reduce energy consumption.

College Station Utilities does provide rebates for newly installed efficient HVAC units. Federal tax credits exist for improvements such as installing energy efficient HVAC units, water heaters, doors, windows, and insulation. More information is available through www.energystar.gov.

The City currently offers rebates for the installation of solar panels and offers net metering. Solar panels create energy from sunlight that is then used to provide electricity to a home. Net metering allows for individuals with solar panels to receive payment for excess electricity that is produced beyond what is needed for the home. In addition to City rebates, other federal rebates exist to encourage the use of solar panels.



The City of College Station now offers rebates for residential solar voltaic panel installation (Source: www.nachi.org)

To encourage customers to invest in energy conservation, College Station Utilities offers rebate programs on the cost of CFL bulbs and energy-efficient air conditioning units. Over 406 rebates were processed in 2010, with 13 Eastgate neighborhood residences taking part in the programs. College Station Utilities also offers voluntary participation in the Wind Watts program which allows customers to purchase power solely from wind energy sources. This program costs about $0.02 more per kilowatt hour, but a portion of the wind energy premium goes to a tree-planting fund for the City. Presently, 32 households within the neighborhood

participate in the program. Additionally, CSU offers free energy audits to help residents reduce their energy consumption. In 2010, the City conducted 245 energy audits, of which 8 were customers residing in the Eastgate neighborhood.

Conservation Strategies:

- **Program Continuation (S2.1)** Continue to fund and promote rebates for CFLs, solar panel installation, rain barrels, and low-flow toilets. Explore opportunities to expand funding for popular rebate programs.
- **Provide Technical Support for New Neighborhood Programs (S2.2) -** Work with neighborhood organizations to develop a green work day for rain barrel or xeriscaping installation or other like projects as neighborhood-building activities.
- **Provide effective organization support and training opportunities (S2.3) -** Promote and educate neighbors about water and energy audits through neighborhood organizations.
- **Ongoing evaluation and indicator program (S2.4) -** Begin tracking utility use, Wind Watts participation, utility audits, and rebate participation through neighborhood indicator program to obtain a better knowledge of program participation and effectiveness.
- **Identify opportunities to expand funding sources (S2.5) -** Explore opportunities and fiscal impact of Property Assessed Clean Energy (PACE) financing to incent local investment in clean energy alternatives.
- **Program Continuation (S2.6)** Continue to monitor water consumption for high users and work with users to conduct a water audit.
- **Program Continuation (S2.7)** Continue to utilize tiered water rates as a water conservation measure.

Stormwater Management

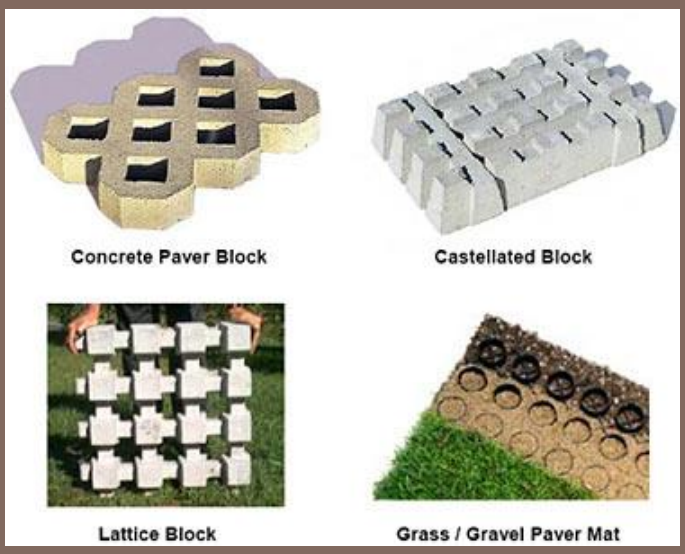
Stormwater management plays a critical role in maintaining healthy streams and creeks, preserving natural habitats, and ensuring safe water supplies for downstream users. Stormwater management aims to improve the quality of stormwater run-off, or water from a rain event that flows over the ground. During and after a rain event, stormwater run-off can pick up debris, fertilizers, chemicals, and other household pollutants as it flows across both pervious and impervious cover and pollute local streams and creeks.

Under the regulation of the Clean Water Act of 1972, which seeks to "restore and maintain the chemical, physical and biological integrity of the Nation's waters," the City has begun implementing programs and practices to control polluted stormwater run-off. The program intends to eliminate the discharge of pollutants to the maximum extent practical, protect water quality, satisfy the appropriate water quality requirements of the Clean Water Act, and manage stormwater activities through the Storm Water Management Plan. The Plan includes public education, participation and outreach, pollution prevention, construction site run-off control, and post construction site run-off control.

Residential property owners can help improve stormwater quality by reducing the use of chemicals in maintaining landscape, properly containing exposed soil and mulch to reduce erosion from water run-off, safely disposing of household waste like used motor oil and other contaminants, and not littering in drainage ways and creek beds. In urbanized areas like the Eastgate neighborhood, the largest contributor to declining stormwater quality comes from over-irrigation and over-fertilization of lawns. By utilizing water conservation methods to reduce over-watering, residents can make a large impact on the quality of stormwater run-off and improve the natural habitats of the creeks and streams to which it flows.

Residents can also assist in managing stormwater run-off by limiting additions to homes that add rooftop area, and by installing pervious materials for patios, sidewalks, and driveways. The Existing Conditions Report in **Appendix A** outlines the average lot coverage by subdivision in this neighborhood. Finding ways to reduce impervious lot coverage reduces stormwater run-off and potential for contamination.

Pervious materials are materials that permit water to enter the ground by virtue of their porous nature or by large spaces in the material.



Examples of Modular Porous Pavers
(From Georgia Stormwater Management Manual, Volume 2, Chapter 3, Section 3.3-44)

Stormwater Management Strategies:

- **Provide effective organization support and training opportunities (S3.1) -** Include stormwater management education and other sustainable neighborhood programs such as creek clean-up or a chemical-free fertilizer campaign to increase awareness and participation in stormwater management practices.
- **Program Continuation (S3.2) -** Continue to monitor water quality in neighborhood creeks and include in neighborhood indicator program.
- **Increase neighborhood notification processes (S3.3) -** Work with Neighborhood Partnership organizations to include neighborhood residents in developing additional stormwater management standards.

Greenways and Open Space

Greenways along streams and rivers help with floodplain management, protect open space and riparian areas, maintain corridors for wildlife and plant habitat, and improve water quality.

Greenways protect open space for their natural function that could otherwise be lost to development. They serve to prevent development from encroaching in flood-prone areas that need to remain in their natural state to function properly and provide necessary flood water storage capacity. Development can also have an adverse impact on

streams through stream channelization, tree canopy removal, and stream bank erosion from increased flows. Wildlife and plant habitats that receive food, shelter, and overall protection from these open spaces may also be affected. Greenways serve to mitigate these negative impacts by filtering pollutants in the water and air, retaining water to help prevent erosion, and sustaining their ecological importance for wildlife and plants. They also allow for the reclamation and restoration of degraded stream channels, provide vegetated buffers between different land uses, and create opportunities for environmental education.

Development and impervious cover (e.g., rooftops, roads, and driveways) increase stormwater run-off into these corridors without the opportunity to utilize the ground to naturally filter many common pollutants. While much of the area within the Eastgate neighborhood is built out, minimizing the negative impact on the existing floodplain and drainage ways reduces flooding and improves the quality of the floodplain so that it will operate effectively to convey floodwaters without harm to the community. The preservation of greenways and creation of open spaces can also serve to complement the City's parks and recreation system.

A tributary of Wolf Pen Creek exists behind and within the lots along the west side of Ashburn Avenue is the most significant portion of floodplain in the neighborhood. Most of the areas along the creek are part of privately-owned residential lots or properties owned by College Station ISD or Texas A&M University. Strategies are proposed in **Chapter 1**, Community Character, to help preserve the creek and wooded areas in the floodplain through voluntary conservation easement dedication.

Keep Brazos Beautiful, in conjunction with the City, has developed a portion of property along George Bush Drive between Texas Avenue and Foster Avenue as a demonstration garden. While only the first phase has been developed at this time, the garden will ultimately consist of native tree species, a walking path and other amenities. Demonstration gardens can be used to showcase a variety of different aspects of gardening and planting, such as native plantings and hardscaping.

One area that has been identified, and is currently proposed, as a community garden is the property owned by College Hill Missionary Baptist Church at 621 Pasler Street. The community garden proposed is a collaborative effort between the College Hill Neighborhood Association and the church.

Greenways and Open Space Strategies:

- **Preserve Open Space and Greenways (S4.1) -** Preserve open space and greenways through conservation easements as identified in **Chapter 1**, Community Character, in order to maintain and protect natural function of the creek and wooded areas within the floodplain.
- **Provide Technical Support for New Neighborhood Programs (S4.2) -** Explore opportunities to create a community gardening

project that would allow neighborhood organizations to utilize public spaces like parks to host community gardens.

- **Partnership Continuation (S4.3) -** Continue partnership with Keep Brazos Beautiful and promote the development of demonstration gardens.

Alternative Transportation and Land Use

Transportation and land use also impact sustainability. The ability to walk or ride a bicycle to nearby destinations not only relieves congestion on local roads, but also reduces energy consumption and encourages health and wellness. Promoting alternative transportation options and efficient land use patterns is an important component to responsible use of natural resources.

The existing land use pattern of the Eastgate neighborhood is generally suburban in nature with the existing alternative transportation network is disjointed. The limited number of bicycle facilities and transit service stops only serve to reinforce the use of personal vehicles as the most viable transportation method.

Future land use designations promote more urban densities along the perimeter of the neighborhood, including vertical mixed-use opportunities. (See **Chapter 1**, Community Character). As the majority of properties are built out, existing opportunities to increase density are mostly limited to redevelopment. While the existing land use pattern presents obstacles to a more sustainable neighborhood, most of the residents of the Eastgate neighborhood live within walking or biking distance of commercial uses, park, or school. These areas serve as key destinations where it is likely residents will interact with each other. Providing a complete alternative transportation network and promoting the use of these areas as neighborhood centers will positively impact neighborhood sustainability.

Chapter 3, Mobility includes three primary alternative transportation networks – walking, bicycling, and bus transit. Neighborhoods can also organize to promote the management of these systems, as well as other methods like carpooling, carsharing, or hosting a No Drive Day for their residents.

Alternative Transportation and Land Use Strategies:

- **Coordinated Public Facility Investment (S5.1) -** Continue to expand open space and bicycle and pedestrian connections through the implementation of the Bicycle, Pedestrian, and Greenways Master Plan and the strategies outlined in **Chapter 3,** Mobility.
- **Coordinated Public Facility Investment (S5.2) -** Promote transit opportunities outlined in **Chapter 3,** Mobility.
- **Feasibility Study (S5.3) -** Explore opportunities and feasibility of having a carshare program like U Car Share or Zipcar.
- **Provide Technical Support for New Neighborhood Programs (S5.4) -** Promote Bike to Work Week, or develop a No Drive Day to encourage biking, walking, and bus ridership.

Education

Education is an important component of sustainability. Outreach to residents helps emphasize the importance of preserving natural resources and the impact it has on the cost of providing services. There are a variety of educational opportunities offered by the City. The latest addition is the Green Seminars Series being offered through the City's Recycling division. This series is offered during the first half of the year and features monthly brown-bag seminars with topics about conservation and sustainability. They are free to the public and dates and topics can be found on the City's Recycling website.

The City is also a sponsor of the Brazos Valley Earth Day celebration every April that highlights different programs, services, and sustainable practices that are available to residents of the Brazos Valley.

Additionally, the City has staff members dedicated to conservation efforts in the City. These staff members have a variety of educational programming, presentations, and literature that are available on request to neighborhoods and residents. Recycling has a mascot that is available for children's events, and other materials specifically geared towards educating children on the importance of recycling. CSU Water and Energy divisions, along with BVSWMA also have a variety of education and informational material that is highlighted in the monthly Utility bill insert. Hands-on experience with City services through tours of facilities like Carter Creek Wastewater Treatment Facility or the BVSWMA landfill are also available.

Education Strategies:

- **Provide effective organization support and training opportunities (S6.1) -** Incorporate green education into new organization training.
- **Provide effective organization support and training opportunities (S6.2) -** Promote the Green Seminar Lunch series to neighborhoods through the neighborhood partnership program.
- **Community Partnership Opportunities (S6.3) -** Work with community organizations like Keep Brazos Beautiful to bring education and other sustainability opportunities to neighborhoods.
- **Ongoing evaluation and indicator program (S6.4) -** Create a green score program that rates neighborhood sustainability through sustainable living practices.
- **Program Continuation (S6.5) -** Continue to fund and promote other existing education programs.